WHAT IS CLAIMED:

1. A synthetic material comprising a network polymer
wherein
said synthetic material has a set of less than 0.1% after having been stretched to 300% of its original length for 10 minutes.

2. A synthetic material comprising a network polymer
said polymers comprising a first monomer and a second monomer,
said first monomer being a $C_3$ to $C_{20}$olefin,
said second monomer being a $C_5$ to $C_{30}$ olefin,
[*m*] being the relative amount of *m* dyads in said polymers
[*r*] being the relative amount of *r* dyads in said polymers
wherein
the isotacticity I of said polymers is between 25% and 80% where I is [mmmm], the *mmmm* pentad concentration of said polymers,
k is at least 0.2, k being defined by

$$k = \frac{[mrrm] - [m]^2(1-[m])^2}{[m](1-[m]) - [m]^2(1-[m])^2}$$

where [*mrrm*] is the *mrrm* pentad concentration of said polymers, and
a fraction of the polymer side chains is connected to form inter-molecular bonds.

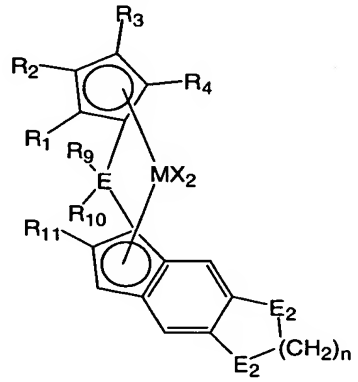
3. A synthetic material according to Claim 2
wherein
said first monomer is propene.

4. A synthetic material according to Claim 2 or Claim 3
wherein
said second monomer is a diene.

5. A synthetic material according to Claim 4
wherein
said second monomer is 7-methyl-1,6-octadiene.

6. A process for synthesizing a network polymer comprising the steps of

- providing said first monomer being a $C_3$ to $C_{20}$olefin
- providing a second monomer being a $C_5$ to $C_{20}$ olefin
- providing a catalyst of the formula




where $R_1$ through $R_8$ refer to linear or branched $C_1$ to $C_{10}$ alkyl, 5- to 7-linked cycloalkyl which in its turn, can carry one ore several $C_1$ to $C_6$ alkyl residues as substituents, $C_6$ to $C_{18}$ arylalkyl or alkylaryl, in which case $R_1/R_2$, $R_3/R_4$, $R_6/R_7$ can be partially or simultaneously integrated into 5- to 7-linked cycloalkyl or aryl rings fused thereto

$R_9$ and $R_{10}$ refer to $C_1$ to $C_8$ alkyl, 4- to 7-linked cycloalkyl, aryl in which case $R_9$, $R_{10}$ can jointly with E form a 4- to 7-linked cycloalkyl

M refers to titanium zirconium, hafnium, vanadium, niobium, tantalum

X refers to a halogen or $C_1$ to $C_8$ alkyl, aryl, benzyl

E refers to carbon, silicon, germanium, or 1.2-ethyl, 1.3-propyl, or 1.4-butyl,

$E_2$ refers to methyl, oxygen or sulphur, and n is 1 or 2.

- providing an activator
- polymerising said first monomer and said second polymer to a random copolymer
- cross-linking said copolymer to form a network polymer

7. A process for synthesizing a network polymer according to Claim 6 wherein

said step of cross-linking involves cross-linking the copolymers by means of ionising radiation.